

DRAFT
CALIFORNIA GROUNDWATER UPDATE
CWP 2013 Groundwater Content Enhancement
Abbreviated Outline

INTRODUCTION

- 1.1. Overview of Historical Groundwater Content in CWP**
- 1.2. Scope and Intent of the Groundwater Update**
- 1.3. Report Organization**

2. FINDINGS

3. RECOMMENDATIONS

4. METHODS and ASSUMPTIONS

4.1. Groundwater Supply and Development

- Alluvial Aquifers
- Fractured Rock Aquifers
- Priority Groundwater Basins

4.2. Groundwater Use

- Well Infrastructure (data gap to be described)
- Land and Water Use Data
 - Beneficial Uses
 - Urban
 - Agricultural
 - Managed Wetlands
 - Groundwater Extraction
 - Metered Approach
 - Land Use and Water Supply Balance Approach
 - Groundwater Level Monitoring Approach
 - Remote Sensing/Satellite Monitoring Approach

4.3. Groundwater Monitoring

- Groundwater Level Monitoring
- Groundwater Quality Monitoring
- Land Subsidence Monitoring
- Remote Sensing/Satellite Monitoring (GRACE)
- Groundwater Modeling

4.4. Aquifer Conditions

- Local versus Regional
- Aquifer Response by Use (Urban, Agriculture, Managed Wetlands)
- Seasonal Response versus Long-Term Trends (intro change in storage)
- Change in Storage

4.5. Groundwater Management Activities

- Overview of Groundwater Management in California
 - Groundwater Management Plans:
 - Groundwater Ordinance:

Court Adjudications:
Other Groundwater Management Planning:
IRWMPs
UWMPs
AWMPs
Other Activities (?)

4.6. Case Studies in Groundwater Management

4.7. Integrated (multibenefit) Groundwater Management Opportunities

Conjunctive Management
Water Banking
Integrated Flood Management

4.8. Groundwater Budget and Indicators of Sustainability

4.9. Groundwater Data Gap Analysis

5. STATEWIDE GROUNDWATER UPDATE

5.1. Statewide Groundwater Supply and Development

Alluvial Aquifers
Fractured Aquifers
Well Distribution
Priority Basins (GAMA, CASGEM, State Board)

5.2. Statewide Groundwater Use

(Report GW Use by HR, use type, and for alluvial vs. fractured aquifer regions)

5.3. Statewide Groundwater Monitoring Efforts

Groundwater Level Monitoring:
Groundwater Quality Monitoring:
Land Subsidence Monitoring:
Remote Sensing/Satellite Monitoring:
Groundwater Modeling:

5.4. Statewide Aquifer Conditions

Groundwater Levels:
Change in Storage:
 Change in Storage using Groundwater Level Data (spring-to-spring data):
 Change in Storage using GRACE Data:
 Change in Storage from Groundwater Modeling Estimates:
Groundwater Quality:
Land Subsidence:

5.5. Statewide Groundwater Management Activities

Groundwater Management in California:
 Groundwater Management Plans
 Groundwater Ordinances
 Court Adjudications
 Other Groundwater Management Planning
 IRWMPs
 UWMPs

AWMPs

Other activities?

5.6. Case Studies of Groundwater Management

5.7. Integrated (multibenefit) Groundwater Management Opportunities

Conjunctive Water Management:

Water Banking:

Integrated Flood Management:

5.8. Statewide Groundwater Budget and Indicators of Sustainability

5.9. Groundwater Data Gap Analysis

6. HYDROLOGIC REGION GROUNDWATER UPDATE

6.1. North Coast Hydrologic Region

6.1.1. North Coast Groundwater Supply and Development

Alluvial Aquifers

Fractured Aquifers

Priority Basins (GAMA, CASGEM, State Board)

6.1.2. North Coast Groundwater Use

(Report GW Use by HR, use type, and for alluvial vs. fractured aquifer regions)

6.1.3. North Coast Groundwater Monitoring Efforts

Groundwater Level Monitoring:

Groundwater Quality Monitoring:

Land Subsidence Monitoring:

Remote Sensing/Satellite Monitoring:

Groundwater Modeling:

6.1.4. North Coast Aquifer Conditions

Groundwater Levels:

Change in Storage:

Change in Storage using Groundwater Level Data (spring-to-spring data):

Change in Storage using GRACE Data:

Change in Storage from Groundwater Modeling Estimates:

Groundwater Quality:

Land Subsidence:

6.1.5. North Coast Groundwater Management Activities

Groundwater Management in California:

Groundwater Management Plans

Groundwater Ordinances

Court Adjudications

Other Groundwater Management Planning

IRWMPs

UWMPs

AWMPs

Other activities?

6.1.6. Case Studies of Groundwater Management

6.1.7. North Coast Integrated (multibenefit) Groundwater Management Opportunities

Conjunctive Water Management:

Water Banking:

Integrated Flood Management:

6.1.8. North Coast Groundwater Budget and Sustainability Indicators

6.1.9. North Coast Groundwater Data Gap Analysis

6.2. San Francisco Hydrologic Region

(Lead Author: NCRO)

6.3. Central Coast Hydrologic Region

(Lead Author: SCRO)

6.4. South Coast Hydrologic Region

(Lead Author: SRO, coordinate with SCRO for Santa Barbara)

6.5. Sacramento River Hydrologic Region

(Lead Author: NRO...coordinate with NCRO)

6.6. San Joaquin River Hydrologic Region

(Lead Author: SCRO...coordinate with NCRO on San Joaquin & Sac Co.)

6.7. Tulare Lake Hydrologic Region

(Lead Author: SCRO)

6.8. North Lahontan Hydrologic Region

(Lead Author: NRO...coordinate with NCRO)

6.9. South Lahontan Hydrologic Region

(Lead Author: SRO)

6.10. Colorado River Hydrologic Region

(Lead Author: SRO)

6.11. Sacramento-San Joaquin Delta

(Lead Author: NCRO)

6.12. Mountain Counties Area

(Lead Author: SCRO (?)...coordinate with NCRO & NRO)

7. REFERENCE

8. GLOSSARY

9. APPENDIX

9.1. Change in Storage Technical Memorandum.